CLAIMS

What is claimed is:

1. A method for determining the spacing of objects, the method comprising the steps of:

receiving data that defines a constraint;

receiving a set of spacing parameter values that indicate how to space objects across said constraint; and

generating a set of points for spacing objects across said constraint based on a bound of at least one dimension of said constraint and said set of spacing parameter values.

2. The method of Claim 1, wherein the step of generating a set of points for spacing objects across said constraint further comprises the steps of:

selecting a grid type from a plurality of grid types, wherein the grid type is associated with one or more grid attributes; and

mapping a grid of said selected grid type onto said constraint.

3. The method of Claim 2, wherein the step of selecting a grid type includes the step of selecting the grid type based on the set of received spacing parameter values.

4. The method of Claim 2, wherein the step of selecting a grid type includes the step of selecting the grid type based on the defined constraint.

5. The method of Claim 2, wherein the step of selecting a grid type includes the step of selecting the grid type based on user input that specifies a particular type of grid that is to be used.

6. The method of Claim 2, wherein the step of selecting a grid type includes the step of selecting the grid type based on the set of spacing parameter values and the defined constraint.

7. The method of Claim 2, wherein the step of mapping a grid of said selected grid type onto said constraint includes the steps of:

generating a set of grid points based on attributes of said selected grid type; and

translating said set of grid points onto said constraint.

8. The method of Claim 1, further comprising the step of receiving input that specifies one or more attributes of said constraint, wherein said one or more attributes are associated with one or more bounds of one or more dimensions of said constraint.

9. The method of Claim 1, wherein the step of receiving data that defines a constraint includes the step of receiving data that defines a one-dimensional constraint.

10. The method of Claim 1, wherein the step of receiving data that defines a constraint includes the step of receiving data that defines a multi-dimensional constraint.

11. The method of Claim 1, wherein the step of receiving data that defines a constraint includes the step of receiving data that defines a spline constraint.

12. The method of Claim 1, wherein the step of receiving data that defines a constraint includes the step of receiving data that defines a sphere constraint.

13. The method of Claim 1, wherein the step of receiving data that defines a constraint includes the step of receiving data that defines a cylinder constraint.

14. The method of Claim 1, wherein the step of receiving data that defines a constraint includes the step of receiving data that defines a rectangle constraint.

15. The method of Claim 1, wherein the step of receiving data that defines a constraint includes the step of receiving data that defines a line segment constraint.

16. The method of Claim 2, wherein the step of selecting a grid type includes the step of selecting a two-dimensional grid type.

17. The method of Claim 2, wherein the step of selecting a grid type includes the step of selecting a three-dimensional grid type.

18. The method of Claim 2, wherein the step of selecting a grid type includes the step of selecting a rectangular grid type.

19. The method of Claim 2, wherein the step of selecting a grid type includes the step of selecting a polar grid type.

20. The method of Claim 2, wherein the step of selecting a grid type includes the step of selecting a hex grid type.

21. The method of Claim 2, wherein the step of selecting a grid type includes the step of selecting a triangular mesh grid type.

22. The method of Claim 2, wherein the step of selecting a grid type includes the step of selecting a spherical grid type.

23. The method of Claim 2, wherein the step of selecting a grid type includes the step of selecting a random grid type.

24. The method of Claim 2, wherein the step of selecting a grid type includes the step of selecting a scattered grid type.

25. The method of Claim 1, further comprising the step of receiving a set of object information, wherein the set of object information identifies a particular object to be placed on the constraint at locations based on said generated set of points.

26. The method of Claim 25, wherein the step of generating the set of grid points includes the steps of generating the set of grid points based on the set of object information.

27. The method of Claim 26, wherein:

the set of object information identifies a bounding box that is associated with the particular object; and

the step of generating the set of grid points based on the set of object information comprises the step of generating the set of grid points based the bounding box.

28. The method of Claim 2, wherein the step of mapping a grid of said selected grid type onto said constraint includes the step of determining one or more locations to place objects on said constraint by identifying one or more areas of said grid that intersect said constraint.

29. The method of Claim 28, further comprising the step of:

receiving pivot point information, wherein the pivot point information specifies pivot points for the placement of objects relative to the generated set of points; and

placing objects on said constraint such that the pivot points of said objects coincide with said one or more locations.

30. The method of Claim 28, further comprises the steps of:

identifying a particular object;

generating a copy of said particular object; and

placing the copy of said particular object at one or more of said one or more locations.

31. The method of Claim 28, further comprises the steps of:

identifying a particular object;

generating an instance of said particular object; and

placing the instance of said particular object at one or more of said one or more locations.

32. A computer-readable medium carrying one or more sequences of instructions for determining the spacing of objects, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform the steps of:

receiving data that defines a constraint;

receiving a set of spacing parameter values that indicate how to space objects across said constraint; and

generating a set of points for spacing objects across said constraint based on a bound of at least one dimension of said constraint and said set of spacing parameter values.

33. The computer-readable medium of Claim 32, wherein the step of generating a set of points for spacing objects across said constraint further comprises the steps of:

selecting a grid type from a plurality of grid types, wherein the grid type is associated with one or more grid attributes; and

mapping a grid of said selected grid type onto said constraint.

34. The computer-readable medium of Claim 33, wherein the step of selecting a grid type includes the step of selecting the grid type based on the set of received spacing parameter values.

35. The computer-readable medium of Claim 33, wherein the step of selecting a grid type includes the step of selecting the grid type based on the defined constraint.

36. The computer-readable medium of Claim 33, wherein the step of selecting a grid type includes the step of selecting the grid type based on user input that specifies a particular type of grid that is to be used.

37. The computer-readable medium of Claim 33, wherein the step of selecting a grid type includes the step of selecting the grid type based on the set of spacing parameter values and the defined constraint.

38. The computer-readable medium of Claim 33, wherein the step of mapping a grid of said selected grid type onto said constraint includes the steps of:

generating a set of grid points based on attributes of said selected grid type; and

translating said set of grid points onto said constraint.

39. The computer-readable medium of Claim 32, further comprising instructions for performing the step of receiving input that specifies one or more attributes of said constraint, wherein said one or more attributes are associated with one or more bounds of one or more dimensions of said constraint.

40. The computer-readable medium of Claim 32, wherein the step of receiving data that defines a constraint includes the step of receiving data that defines a one-dimensional constraint.

41. The computer-readable medium of Claim 32, wherein the step of receiving data that defines a constraint includes the step of receiving data that defines a multi-dimensional constraint.

42. The computer-readable medium of Claim 33, wherein the step of selecting a grid type includes the step of selecting a two-dimensional grid type.

43. The computer-readable medium of Claim 33, wherein the step of selecting a grid type includes the step of selecting a three-dimensional grid type.

44. The computer-readable medium of Claim 33, wherein the step of selecting a grid type includes the step of selecting a rectangular grid type.

45. The computer-readable medium of Claim 33, wherein the step of selecting a grid type includes the step of selecting a polar grid type.

46. The computer-readable medium of Claim 33, wherein the step of selecting a grid type includes the step of selecting a triangular mesh grid type.

47. The computer-readable medium of Claim 33, wherein the step of selecting a grid type includes the step of selecting a spherical grid type.

48. The computer-readable medium of Claim 32, further comprising instructions for performing the step of receiving a set of object information, wherein the set of object information identifies a particular object to be placed on the constraint at locations based on said generated set of points.

49. The computer-readable medium of Claim 48, wherein the step of generating the set of grid points includes the steps of generating the set of grid points based on the set of object information.

50. The computer-readable medium of Claim 49, wherein:

the set of object information identifies a bounding box that is associated with the particular object; and

the step of generating the set of grid points based on the set of object information comprises the step of generating the set of grid points based the bounding box.

51. The computer-readable medium of Claim 33, wherein the step of mapping a grid of said selected grid type onto said constraint includes the step of determining one or more locations to place objects on said constraint by identifying one or more areas of said grid that intersect said constraint.

52. The computer-readable medium of Claim 51, further comprising instructions for performing the step of:

receiving pivot point information, wherein the pivot point information specifies pivot points for the placement of objects relative to the generated set of points; and

placing objects on said constraint such that the pivot points of said objects coincide with said one or more locations.

53. The computer-readable medium of Claim 51, further comprising instructions for performing the steps of:

identifying a particular object;

generating a copy of said particular object; and

placing the copy of said particular object at one or more of said one or more locations.

54. The computer-readable medium of Claim 51, further comprising instructions for performing the steps of:
identifying a particular object;
generating an instance of said particular object; and
placing the instance of said particular object at one or more of said one or more locations.

55. A computer system for determining the spacing of objects, the system comprising:
a memory;
one or more processors coupled to the memory; and
a set of computer instructions contained in the memory, the set of computer instruction including computer instructions which when executed by the one or more processors, cause the one or more processors to perform the steps of:
receiving data that defines a constraint;
receiving a set of spacing parameter values that indicate how to space objects across said constraint; and
generating a set of points for spacing objects across said constraint based on a bound of at least one dimension of said constraint and said set of spacing parameter values.

56. The computer system of Claim 55, wherein the step of generating a set of points for spacing objects across said constraint further comprising instructions for performing the steps of:
selecting a grid type from a plurality of grid types, wherein the grid type is associated with one or more grid attributes; and
mapping a grid of said selected grid type onto said constraint.

57. A computer system for determining the spacing of objects, the system comprising:

means for receiving data that defines a constraint;

means for receiving a set of spacing parameter values that indicate how to space objects across said constraint; and

means for generating a set of points for spacing objects across said constraint based on a bound of at least one dimension of said constraint and said set of spacing parameter values.

58. The computer system of Claim 57, wherein the step of generating a set of points for spacing objects across said constraint further comprising:

means for selecting a grid type from a plurality of grid types, wherein the grid type is associated with one or more grid attributes; and

means for mapping a grid of said selected grid type onto said constraint.